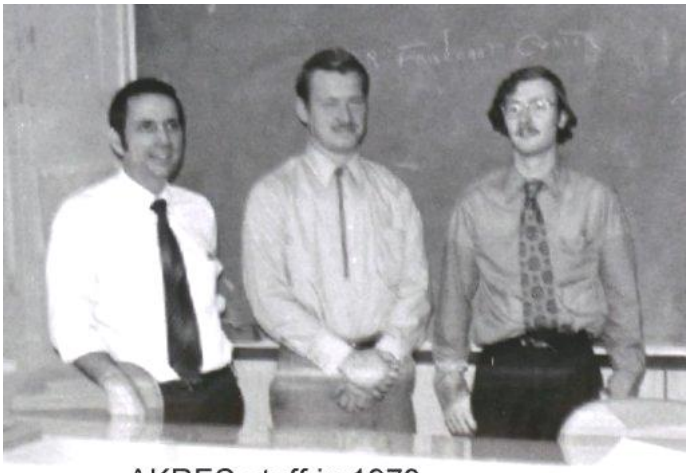
Alaska-Pacific RFC (originally known as the Anchorage RFC)

Glen Audsley arrived at the Alaska Regional Headquarters February of 1968 as the 2nd Regional Hydrologist, replacing Otto Prexis. For Mr. Audsley this would be the first of three Regional Hydrologist jobs (Alaska, Southern and Central). At the time there was no data, any river forecasting was done by pulling numbers from thin air without data. Mr. Audsley was tasked with establishing a river and rain gage network. The river gage network was mostly comprised of very rustic slope profile gages[1]and single sideband radios in the villages to transmit the data. Alaska flooding is very erratic and flooding from ice jams is very common. Mr. Audsley recalls working on various projects with the U.S. Army Corps of Engineers Cold Regions Research and Engineering Lab and the U.S. Geological Survey.

The 1967 flood put Fairbanks under, along with some other floods, provided the motivation by Congress to fund the creation of the Alaskan RFC. Mr. Audsley oversaw the spin-up of the Alaskan RFC in 1971. Glen hired Tom Bowers as the first HIC, and Jerry Nibler and Dave Street as the first staff members.



AKRFC staff in 1973.
Tom Bowers, Jerry Nibler,
and Dave Street

[1] A slope profile gage (original called a bank profile gage) consists of a marker or series of markers anchored in the bank above the level that can be damaged by ice movement. Markers usually are rods driven into the bank with a brass cap bench mark attached to the top of the rod. The profile of the bank is surveyed to establish ground elevation corresponding to taped distance measurements from the markers. The surveying data are used to calculate water stages from the slope distances measured by the observer.

Mr. Audsley wrote a paper[2] describing the development of the Alaska hydrologic program, here are a few excerpts from that paper.

The phenomenon of break-up on the major rivers (in Alaska) is truly a spectacular event that is witnessed by very few people other than the villagers residing in the area. At the onset, there is some overflow on the ice, and as pressures increase, the ice is lifted, then fractures, and finally, commences to move. The squeezing effect on well rotted ice just before movement causes elongated ice needles to pop upward, resembling worms coming out of the ground. Many times, the ice needles will accumulate to a depth of 2 to 3 feet before ice movement occurs. If the Ice is still strong when movement begins, there is a deafening roar and trembling along the banks as the ice breaks which many accounts say, has the sensation of an earthquake tremor.

Congressional funding for the Alaska Hydrologic Network was approved in 1969 and the NWS Alaska Region embarked upon a three-year program *of* river gage installations. One of the first problems to be faced was the design of a gage that would remain in place through break-up, i.e., one that would not be destroyed by ice erosion. Past experience with conventional bubbler gages installed on the high bank with an air tube buried in the bank leading to a submerged orifice has proven to be unsatisfactory. There is a large amount of glacial sedimentation in most rivers and the orifices were continually being plugged. Since there are no bridges in Alaska over the Yukon or Kuskokwim Rivers and their tributaries, the standard wire-weight gage was eliminated. To construct stilling wells for float-type gages would have been prohibitive, cost-wise, as well as unfeasible due to the ice problem. Consequently, it was decided to adopt a bank, profile gage. Steel rods are driven into the bank, usually at 25 to 75-foot intervals, and topped with a plain brass cap. Identification numbers are stamped on the cap. Because there are usually no bench marks in the area an arbitrary gage zero is assigned and the bank profile then surveyed to this datum. Several permanent reference marks are established, usually near a house or church. The gage zero is set at a high enough figure to insure that no negative stages will result at low water. Therefore, it is obvious the stages have no correlation with the actual depth of water.

The logistics (and expense) of installing a gaging network was formidable. The only possible means of transportation to most of the stations was *by* air, either wheel or float planes. It was necessary to stockpile the steel rods at central river locations, such as Fairbanks, Fort Yukon, Galena, McGrath and Bethel, as *the* carrying capacity of a small plane is quite limited. Normally, the aircraft carries a two-man installation team besides the pilot, food and survival gear, sleeping bags, surveying instruments, a 100-pound jackhammer drill for driving the rods,

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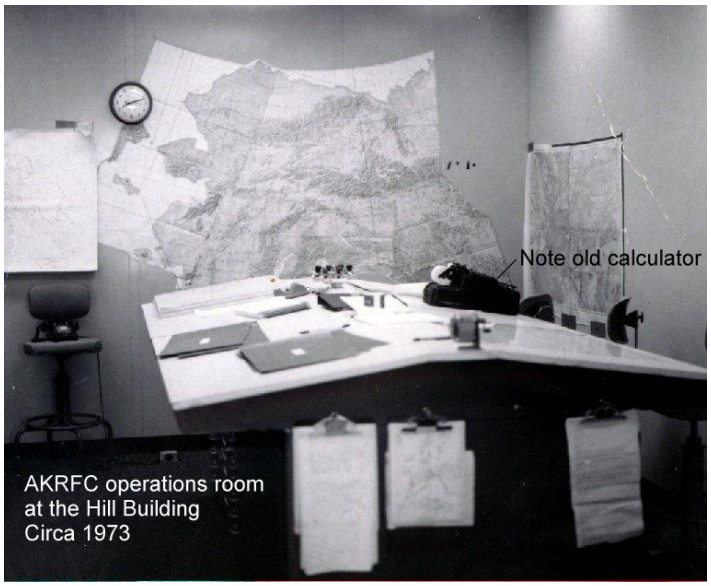
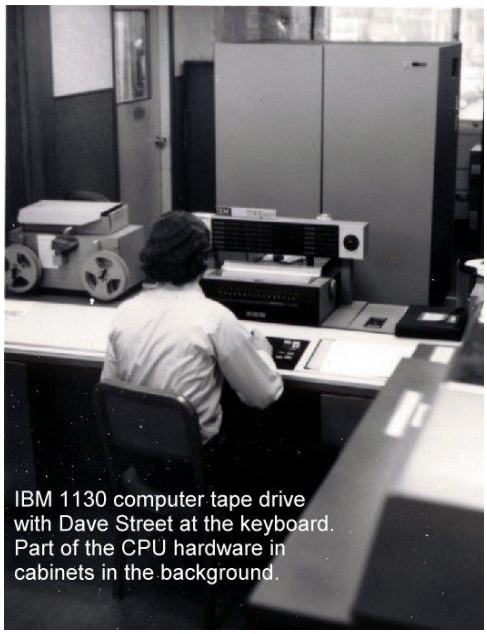
[2] Development of a Hydrologic Program in Alaska by Glenn L. Audsley, 1972

toolboxes, boots, and many other items too numerous to list. Oftentimes a party would depart Anchorage and encounter had weather which either forced a trip cancellation or caused several days of delay in the field if they elected to wait out the weather. In the summer of 1969 delays were experienced because smoke from forest fires over much of the interior reduced visibility, restricting the movement of low flying aircraft.



AKRFC operations room
at the Hill Building
Circa 1973


IBM 1130 computer tape drive
with Dave Street at the keyboard.
Part of the CPU hardware in
cabinets in the background.

Dave Street: Glen Audsley and Joe Strahl were the ones that got me the job right out of the University of Maryland. Joe was an older hydrologist then (1969-71 I think) from the Office of Hydrology that went back to school for a masters and was in my classes. He used to take a mat and put it on the floor in the lab and take a nap at the University. Anyway, near graduation in 1971 he told me that the Weather Service (it must have just changed its name from the Weather Bureau) was going to start two new RFC's, one in Slidell and the other in Anchorage. I told him that I was not much for the southern weather but being young I thought going to Alaska sounded exciting!!! So I pursued it and they got me the job over a couple of guys from Arizona I think. Never would have gotten it if not for Joe ... needed an in. Glen Audsley later said that he would take a gamble on me even though I had long hair (at the time). So I was with Hydrology for 34 and half years - tried to not disappoint! I spent 16 years in Alaska (1971-1987) and then moved to headquarters a couple of years before the closing the Gramax Building. So I drove to Alaska when they had 1,000 miles of gravel - that was neat. I had a wife and two kids at the time (boy did I get married young). The second was 17 days old when we left in a Dodge van (remember, I was not really a hippy - no time for that). Those WERE the good old days. Jerry Nibler had come up the previous year and the boss was Tom Bowers from

maybe Cincinnati RFC ... maybe. We set up the desks and all and managed to forecast using several basins per rain gage!! We used seat-of-the-pants forecasting for quite a few years - many years in fact. Had a radio to get field reports ... and mailed in cards from the field with stages (a week late). Once got a card from Chalkyitsik (northeast of Fairbanks) saying that debris and stuff - maybe houses or such were floating by today - at least we got reports but it was at least a week after the flood. Yes, the good old days. My main interest was in computers which was relatively new then. We worked to get an IBM 1130 in-house and it was really a neat computer. I think it was much more interesting to run those computers then the computers now. If I had to do it over now I think I would have pursued something other than computer work - but it was neat then.

Gerald (Jerry) Nibler is a name that is synonymous with the National Weather Service (NWS) hydrology program in Alaska. Glen Audsley (then the Regional Hydrologist for Alaska) recalls meeting Jerry Nibler at a Western Snow Conference at Phoenix/Tucson in 1970. Glen interviewed Jerry for several positions that were open at the time. He was so enthusiastic and his credentials so impressive, Glen Audsley hired him. He became part of the regional hydrology staff and in 1971 he went on to become one of the original members of the Anchorage River Forecast Center. Mr. Nibler went on to become the Alaska Regional Hydrologist and Hydrologist-in-Charge from 1980 until his retirement in 2000. Although he is not with us today (he passed away April 14, 2003, of complications from lung cancer) Mr. Nibler spent his entire NWS career in the Alaska region, however, his accomplishments touched individuals and programs throughout the nation. Jerry was both a meteorologist and hydrologist. One of his greatest accomplishments was the morphing of the Alaska RFC into the Alaska-Pacific RFC, with responsibility for both the Alaska and Pacific Regions. Another legacy Jerry provided to the APRFC was its close partnerships with other state and Federal agencies. The partnership of the APRFC and the Alaska Division of Emergency Services (ADES) in a joint annual aerial reconnaissance of spring ice breakup on key rivers is unique in the NWS. This on-site evaluation of conditions by ADES emergency managers and RFC forecasters provided the best observations of conditions, rapid evaluation of risk and threat, and clear communication with RFC forecasters and with residents of local communities threatened by flooding of the Yukon, Koyokuk, Kobuk, and Kuskokwim Rivers. Jerry was dedicated to the infusion of science into the hydrology program. The effects of snow, glaciers, jokulhlaups (glacier dammed lake outbursts), river ice, rain, and snowmelt runoff, coupled with complicated topographic influences and scarcity of data, made river forecasting in Alaska a challenge. Jerry encouraged and contributed to creative approaches to improve that forecasting and the service provided by the RFC. Jerry proposed the concept of extended streamflow forecasts in a 1974 paper outlining the Alaska development and application of spring snow melt flood probabilities. The process used a statistical Monte-Carlo simulation from a hydrologic model and a collection of temperature and precipitation time series to produce a range of hydrographs from which probability inferences could be made about flood potential. The concept was

adopted, enhanced, and implemented by the Office of Hydrology (OH) as the foundation of the advanced hydrologic prediction services. It was also applied in snowpack evaluation for seasonal water supply forecasts on the Kenai Peninsula. Jerry introduced new glacier model components into the model. He fostered the sharing of knowledge and science through the cooperative Cold Regions Hydrology Workshops held jointly with OH, the other NWS regions, and U.S. Army Corps of Engineers.